ABSTRACT

A cable modem communicates the timing of the arrival of certain packets (such as TCP ACK packets) to a cable modem termination system. This timing feature is useful in methods for increasing the throughput in the downstream direction by eliminating TCP ACKs backing up at a cable modem. In particular, a cable modem termination system implementing an unsolicited bandwidth grant service in which unsolicited grants of bandwidth are sent by the cable modem termination system to the cable modem. The grants of bandwidth are timed to arrive at the cable modem simultaneous with or shortly after the arrival of the TCP ACK from an end station connected to the cable modem. Several methods of calculating or predicting when the unsolicited grants should be sent to the cable modem are described. The method is also applicable to other types of packets, such as voice packets from a end station implementing a Voice over Internet Protocol (VOIP) application.

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